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STAX
SRS-3100

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ELECTROSTATIC EARSPEAKER SYSTEM

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\$1,399 RRP

“Few brands remain so strictly loyal to an original formula”

In a world where the headphone market is almost completely enamoured with dynamic drivers, Stax remains true to a completely different technological heritage.

Formed in Japan in 1938 in Japan, for the first twenty years they specialised in phono cartridges and condenser microphones. It wasn't until 1959 that Stax developed a milestone in audio history: the world's first electrostatic headphone, the Stax SR1.

Since then, Stax has further developed electrostatic technology producing models that are unwavering, unchanged, and firm in their style and line-up.





Few brands remain so strictly loyal to an original formula, and it's fascinating to witness such commitment in a world where audio products and technology changes in a heartbeat.

I received the entry level Stax SRS-3100 earspeaker system which comprises the SR-L300 earspeakers, and the SRM 252S amplifier for review, with excitement.

"Earspeaker? Really?" I hear you asking.

Don't be fooled into thinking these are just a gimmick headphone. Stax doesn't refer to their products as headphones, instead opting for "earspeakers". Initially, I scoffed at the designation. But after a while, it dawned on me that this is a serious offering, and that I was dealing with a whole new beast.

It's not just a headphone, it's an entire system complete with a fully functioning dedicated headphone amplifier. The inclusion of the amplifier is not just a nicety, but a necessity.

Due to their unique technology, electrostatic products such as these exist in their own entire audio ecosystem. Stax' earspeakers themselves are completely incompatible with existing audio hardware. There are no 3.5mm headphone jacks here.

Unboxing the rig and setting it up was an eerie experience. Usually at this point during the review, I would get to work with a series of comparisons between amplifiers and DACs. I like to test the matching between components and determine how effectively some headphones might fare with a tube amp, or how well they scale with portable hardware. But this time around, I just had to push all of my usual gear aside and let this mysterious Japanese box exist in solitude on my desk.

“old school engineering practices
and modern technical applications”

Build

As I held the SR-L300 in my hands I can't help but feel like they were taken straight from the 1970s. In a marketplace where we have become so accustomed to seeing four figure priced headphones featuring rich mahogany woods, sheepskin leathers and rugged styling, the SRS-3100 system sits in a league of its own, retaining its old-school look and feel.

Flexible, thin black plastic makes up the majority of the assembly. I found the urge to handle them with caution as I didn't feel entirely confident they could take much more than a slight tumble. The pads are made from faux leather, and are quite lean.

Despite looking bulky, they are surprisingly light, coming in at 322 grams. For reference, a pair of Sennheiser HD800 headphones are 330 grams.

The enormous perforated metal driver assemblies are easily visible from the outside of the headphone, and they appear to be well protected by their plastic shell.

Despite feeling flimsy, there is something attractive about the overall physical design and feel of these headphones. There is an almost antique, rustic, boutique quality to them; even just seeing them in person almost gives the impression that this is something truly unique and special. Despite all this, they certainly don't feel cheap.

Aesthetically speaking, the SRM-252S amplifier is a much more standard affair. The 132 (W) × 38 (H) × 132 (D) mm black and silver metal box is reminiscent of the JDS labs O2 amplifier. On the outside, it is a very low-fuss deal – one pair of RCA in, one pair of RCA out, an LED light indicating power, and a volume knob.

The flat ribbon cable that connects the two units is surprisingly bulky. It has a PRO-bias 5-pin connector instead of a traditional headphone plug, so you won't be trying to plug in your Sennheiser or HiFiMAN headphones anytime soon.





Inside the headphone

This is where things start getting a little unusual. Traditionally, over-ear headphones use a dynamic driver. This is the typical audio technology that is employed in loudspeakers, headphones, and even some IEMs.

Generally, dynamic drivers are housed in wood or plastic and are conically shaped. In a headphone, they are typically anywhere between 30mm to 50mm in diameter and have diaphragms which are made from varying materials including paper, plastic, or a composite material.

The diaphragm is attached to a voice coil. When alternating current is applied to this voice coil, it moves the driver back and forth rapidly. This movement pushes the surrounding air to create soundwaves.

However, in Stax earspeakers, electrostatic technology is employed which is fundamentally different to the dynamic driver. Instead of a single voice coil being pushed by

an alternating current charge, there are two perforated plates (typically made of metal), with a thin electrically charged diaphragm sandwiched in between. When a high voltage audio signal is applied to the plates, the diaphragm is pushed and pulled back and forth accordingly – producing sound waves.

There are many advantages to using an electrostatic audio system. The most obvious of which is the amazingly low distortion produced compared to a traditional dynamic driver. As well as this, an electrostatic rig will have unparalleled levels of detail and accuracy, especially in the midrange and high frequencies.

With the STAX SR-L300 earspeaker there is an oval-shaped sound element, featuring a push-pull electrostatic driver and a completely open-backed design.

“in Stax earspeakers,
electrostatic technology is employed”





Using the headphone

Despite being so bulky and large the Stax SR-L300 earspeakers have solid ergonomics. The driver enclosure is very long, but doesn't feel heavy or weighted down.

The headband assembly consists of two parts: the stepless slider headband, and the comfort strap. The strap sits neatly above the head, which takes the bulk of the weight and distributes it evenly across the head.

The non-removable cable is a little heavy and quite long at 2.5m. It's unusual 6 core ribbon structure is easy to roll up but can sometimes get in the way.

Despite the low weight, the sheer bulk of these headphones is difficult to ignore. There may be some slight discomfort after long sessions of wearing these, due to the unusually thin faux leather pads. But for the first few hours, you won't notice any overheating or weight problems.

These are definitely not portable headphones. Not only are they huge, but they also require proprietary amplification and are completely open backed. They are for sitting down (preferably reclining), and becoming engulfed in music. Nothing wrong with that!

Sound

Thinking once again about the whole “earspeaker” naming, I must admit that I had a chuckle. How different could they possibly sound to a traditional pair of headphones? Surely there’s no way they deserve to be in a different category of their own?

Boy, how wrong I was.

Cueing up **Kiasmos – Held** delivered an excellent demonstration of both kicking bass, delicate mids, and details highs. This track is a great way to test the dynamic capabilities of a headphone.

While the Stax SR-L300 doesn’t have the same lively midbass thump that some dynamic drivers do (Sennheiser’s HD800S for example), they do handle the gentle piano and panning effects effortlessly. Some headphones tend to favour either the bass or

the highs with this track, but the Stax feel very balanced overall. Some of the panning effects in the first minute of the song give some very eerie “out of head” experiences, too.

Many **Tom Waits** tracks have plenty of small details hidden away at the back of the mix, and can really test the transient response of a headphone. *All The World Is Green* is a great example and the superb mastering of this track really comes to light with the Stax SR-L300. The deliberate positioning of each instrument gives an excellent example of the pinpoint precise imaging ability of this headphone.

I can literally point to exactly where each instrument has been placed in the mix, consistently. Tom’s voice rasps straight down the centreline throughout the entire track, and each instrument has been placed in specific

locations around him. Some headphones (especially some closed-back designs and IEMs) can feel a little congested and muddled on this song. However, in this case, the space is wide open, and the soundstage is enormous.

Typical to **Hans Zimmer**, there are so many layers in each minute of *S.T.A.Y* that one would struggle and attempt to count them all. At any one given time, there may be six or seven things happening at once, yet somehow it all neatly comes together at once in harmony.

This was a spectacular listen with the Stax SR-L300 as it is one of the most detailed headphones I have ever auditioned. I’m easily able to pick apart every layer and listen specifically to it. Not only that, but the usually



barely audible passages of this track are easily heard.

Even the quietest additions to this composition are clearly audible, giving an excellent testimony to the sheer dynamic range of the electrostatic drivers. Between the 4:00 to 4:30 minute mark, it can become quite challenging to try to focus on one specific layer with a traditional dynamic driver, such as the Denon D5000.

With the Stax, it's made a lot simpler. There isn't quite enough low-end rumble to truly tie this piece together like I'm accustomed to, but it's easy to forgive when the details are so within reach.

Whilst thumping bass might not be the name of the game here, it's still present when required. It's not as thumping as the HD800S, especially

in the meaty 120-160Hz region. However, it's still heavier than the Grado SR series. It's somewhat like the Audeze LCD 2 in frequency response, but with much lower volume. It's a very linear and flat bass response which sits nicely within the overall mix.

The midrange of electrostatic earspeakers is often said to sound "ethereal". To be honest, I'd never really understood exactly what that meant, until now. The speed, transient response and detail is completely unparalleled.

Whilst enjoying my extended listening sessions for this review, there were a few times that I had to take the headphones off just to be sure the music was coming through the Stax, and not from my Sonus Faber Concertino speakers sitting either side of the desk!

There is just so much detail and such a wide soundstage that I've never heard from a dynamic driver headphone before.

In terms of isolation, there is basically zero. These are wide-open; you'll hear everything happening around you, and anyone near you will hear your music too.



“so much detail and such a wide soundstage”



SRM-252S SPECIFICATIONS

Type / All-stage semiconductors, Low-noise dual FET input Class A operation, Pure balance DC amplifier configuration Earspeaker driver unit	Input Impedance / 50KΩ(RCA)
Frequency Response / DC to 35,000Hz with SR-207 (with SR-207)	Max. Output Voltage / 280V r.m.s. (1kHz)
High Harmonic Distortion / Max 0.01% (1kHz at 100V r.m.s.)	Standard Bias Voltage / PRO 580V x 1
Gain / 58dB (x800)	Power Voltage Frequency / 117V (50Hz / 60Hz)
Input Terminal / 1 RCA with 1 RCA parallel out	Power Consumption / 4W DC12V
Rated Input Level / 125mV / 100V Outputs	Temperature & Humidity / 0 to 35°C / 90% max. without condensation
Max. Input Level / 30V (at minimum volume level)	Dimensions / 5.2 (W) x 1.5 (H) x 5.2 (D) in
	Weight / 1.2lbs

SR-L300 SPECIFICATIONS

Type / Push-Pull electrostatic oval sound element, Open-Air type enclosure	Ear Pads / High-quality synthetic leather
Frequency Response / 7 – 41,000Hz	Cable / OFC parallel 6-strand, low-capacity wide cable, 2.5m full length
Capacitance / 110pF (including cable)	Ambient Temperature & Humidity / 0 to 35°C / 90% max. without condensation
Sensitivity / 101dB / 100V r.m.s. 1 kHz	Weight / 11.4oz without cable / 15.8oz with cable
Bias Voltage / 580V DC	
Left & Right Channel Identification / 'L' and 'R' indicated on the arc assembly, solid line (left) and dotted line (right) on cable	

Conclusion

The Stax SRS 3100 system is a truly unique experience.

They may feel a little brittle in your hand and it could even be largely inconvenient to have an entirely separate audio ecosystem, but honestly, I couldn't care less about all of that. Once I put these on my head, I was basically ruined for all other headphones.

Some may consider this investment to be "flagship" pricing when ultimately for electrostatic headphones it's really an entry level price point. When you keep in mind that typical "high-end" traditional headphones today are easily demanding an investment of over \$2000, then the Stax SRS 3100 system starts looking even more enticing.

Trying these out will surely be one of the most realistic listening experiences you'll ever encounter in high-fidelity sound. The mammoth soundstage, the immaculate imaging and the incredible detail will surely win you over as well.

I highly recommend you give this system an audition at least once in your life. It's quite an experience.

WORDS/IMAGES: Matthew 'Jensy' Jens